LF2OH: Learning Program in Enhancing Financial Literacy for Students

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ABSTRAK

Abstract: Financial technology advancement has both positive and negative impacts on society. For generation Z who have not worked, financial technology's convenience may create financial problems, both for themselves and their families, considering that their financial source comes from their parents. Therefore, there is a need to provide a learning program for financial literacy and concern for the family's financial condition. The learning program is packaged in a Learning Management System (LMS) with the name Learning Financial Literacy from Our Home (LF2OH). This study is aimed at examining the effectiveness of the learning program and testing by using the experimental method of Solomon's four group model on 281 high school students. The test results indicate that the average gain score and post-test financial literacy of students treated with the LF2OH program are higher and significantly different than students who are taught classically without involving learning in the family environment. This proves that the learning program using LF2OH effectively improves the financial literacy of high school students.

Abstrak: Kemajuan teknologi keuangan memiliki dampak positif dan negatif bagi masyarakat. Bagi generasi Z yang belum bekerja, kemudahan teknologi keuangan dapat menimbulkan masalah keuangan, baik bagi dirinya maupun keluarganya, mengingat sumber keuangannya berasal dari orang tuanya. Oleh karena itu, perlu adanya program pembelajaran literasi keuangan dan kepedulian terhadap kondisi keuangan keluarga. Program pembelajaran tersebut dikemas dalam *Learning Management System* (LMS) dengan nama *Learning Financial Literacy from Our Home* (LF2OH). Penelitian ini menguji keefektifan program pembelajaran dan pengujian dengan menggunakan metode eksperimen model empat kelompok Solomon pada 281 siswa SMA. Hasil tes menunjukkan bahwa rata-rata peningkatan nilai dan *post-test financial literacy* siswa yang diberi program LF2OH lebih tinggi dan berbeda dibandingkan siswa yang diajar secara klasikal tanpa melibatkan pembelajaran di lingkungan keluarga. Hal ini membuktikan bahwa program pembelajaran menggunakan LF2OH efektif meningkatkan literasi keuangan siswa SMA.

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The teacher-oriented and classical learning process in formal economic education activities seem ineffective in achieving the idealized learning objectives and does not provide opportunities for students to criticize the actual economic phenomena that exist in their environment (Kocoqlu & Tekdal, 2020). This issue is getting worse during the Covid-19 pandemic considering that the learning activities are conducted using an online platform such as the Google Meet, Zoom, and MS Team platforms, equipped with message communication facilities via WhatsApp and Google Classroom (Assen et al., 2020; Siron et al., 2020). Consequently, the effectiveness of learning decreases and makes students less enthusiastic about learning (Putri & Utami, 2020; Lazarides et al., 2021).

To deal with the infirmity of online learning, the information technology-based learning program is needed in a learning management system (LMS) package that is easily accessible with a mobile phone anytime and anywhere (Koomson, 2019). Such a learning program should contain contextual content and be packaged attractively with various presentations to encourage students to learn independently (Warsito et al., 2019; Sudianto et al., 2019). Accordingly, competency-based learning applied nationally in Indonesia, including economic education, seems no longer adequate for students. Learning that should be used to stimulate independent learning through contextual content related to students' lives is life-based learning. Likewise, Jackson (2011) also reveals the importance of integrating learning activities in schools with experiences gained and learned from the environment outside of school.

In education globally, it has changed towards life-based learning and oriented towards developing capabilities, namely the ability to apply competencies to deal with changes and problems in life (Kastur & Riyanto, 2020). However, in the Indonesian context, the applicable curriculum is still competency-based (Mukminin et al., 2019). The content of the economic education curriculum in high school that applies in Indonesia is only directed to encourage the formation of economic people who understand

national economic conditions. In particular, economic education is not directed at forming humans as economic actors who have the capability to apply the fundamental values of wise economic behavior, namely being efficient in managing consumption needs and desires, effective in productive behavior, and including being proficient in financial behavior. Topics related to home economics are not included in the economic education curriculum in Indonesia (Wahyono, 2019).

The problem of the insufficient skills of secondary education students related to wise engagement in the economy and specifically in financial behavior requires a solution through the development of learning programs outside the context of the curriculum and the learning process can be done outside the school environment and can be conducted anywhere (ubiquitous learning) (Aljawarneh, 2020). Learning media suitable for the process in question are in the form of learning application programs that can be accessed through gadgets in the form of a Learning Management System (LMS) to encourage students to care about the family's financial condition and how parents manage the household budget. Students can relate the substance of the competencies they have learned in the developed application program with the actual conditions of family financial management in such learning. In addition, students will be aware of the family's financial condition, and they will also be encouraged to discuss family financial management with their parents openly. The LMS application program developed was named "Learning Financial Literacy from Our Home (LF2OH)".

In previous research, a package of LMS application learning programs has been produced to encourage high school students to have concern for the financial management of their family or parents, as well as to improve their financial literacy and capability in managing their finances. The program in question presents eight topics of discussion, namely (1) understanding the sources of our parents' income; (2) understand our parents' expenses; (3) understand our family's cash-flow; (4) identify the property, assets, debts of our parents; (5) discuss our family's financial problems; (6) saving for unexpected and future expenses; (7) understanding financial products and services with families; and (8) managing personal finances. The material is presented in explanatory narration in animated PowerPoint format, self-produced videos or downloaded from the Youtube, and case study presentations and discussion of solutions in an interactive way. The results of the developed program have also been assessed for feasibility by learning technology experts and economics subject teachers as practitioners. This research was conducted to test the program's effectiveness developed through experiments with a broader target

Involvement of Children in Family Financial Management

Family financial management can be interpreted as a series of daily financial activities regularly and comprehensively to plan, implement, and evaluate income and expenditure streams to achieve current and future family welfare goals (Bowen et al., 1997; Nurhayati & Muflikhati, 2020). As is known from the various resources in one family, money is the essential resource to be appropriately managed to achieve family goals, namely the harmonious, prosperous, and happy life of all family members (Watson & Barber, 2017). Managing family finances is increasingly felt when it is realized that in the current millennial era (Safira & Rahadi, 2020). Advances in science and technology have brought significant developments to be economical and cultural life, and it has changed the mindset and lifestyle of each family unit whose conditions vary. Diversity does not only occur between family units but also in each family member. The mindset and lifestyle of children can be different from their parents because they are born from different generations. For this reason, family financial management needs to be conducted openly and discussed by all family members (Glukhov, 2013; Bialowolski et al., 2020).

Openness and consensus in financial management for the achievement of family economic goals, its success is determined by several factors. The first is the personal economic behavior gap between family members (Glukhov, 2013). Both cultures are based on race and ethnicity, which characterize social and familial relationships in one family. The third is the limited income as a source of financial allocation problems (Bowen et al., 1997). Fourth is the maturity and education of each family member, as a determinant of self-control and achieving consensus in family financial management (Hilgert et al., 2003). Fifth, the role of husband and wife as breadwinners in the family (Pfau-Effinger, 2007). These factors together influence the success of family financial management through the development of an open management system, discussed in a conducive family relationship.

In a broader sense, Bialowolski et al. (2020) reveals how important it is to involve children in family financial management because it will encourage a sense of financial responsibility in children to be aware of the importance of budget management as they grow into adults. The involvement of children in financial management is not limited to discussing together family financial problems. However, it can also be realized by asking children to explore offers of cheap or discounted goods via the internet. Looking for information about banks that provide higher interest or what investments are having good opportunities. Parents can also provide wages for household chores carried out by children.

Meanwhile, LeBaron et al. (2020) stated that by involving children in family financial management, children have the opportunity to learn to be wise economic actors. Efficient in consumption and able to distinguish between needs and wants, and have the skills to plan the budget for future expenses. The involvement of children in family financial management can be a vehicle for children's education to be wise and clever in financial management. From the seven suggestions on how to practically manage family finances, LeBaron et al. (2018) explained that one of them is the need to teach children and families about finances, especially for millennial children who have different lifestyles from parents who were mostly born baby boomers. Children learn more about financial management from their parents and family than from school (Shim et al., 2010). Therefore, the strategy and the way parents teach financial knowledge, attitudes, and behavior will significantly determine the child's ability throughout his

life to manage finances. For this reason, instructions and examples need to be instilled in children. Children need to be taught about financial management through real examples by parents and provide opportunities for children to manage their finances with the principles of hard work, frugal living, and the spirit of saving and emphasizing the importance of education as high as possible for future success.

Financial Literacy Education in Indonesia

Financial literacy has an increasing urgency to pay attention to and develop educational programs, especially for young people (Lusardi & Mitchell, 2017). The shift in economic life due to advances in science and technology, where financial service products are developing rapidly and facilitating transaction processes, and being non-cash in nature, are increasingly demanding the community especially young people to improve their financial literacy (Jang et al., 2014; Moreno-Herrero et al., 2018). The emphasis on the importance of increasing financial literacy among young people is based on the awareness that the younger generation is primarily struggling with the development of financial technology, and they are at the stage of learning to manage finances. Their success in managing finances will determine their future success (Wulandari & Narmaditya, 2018). Someone with adequate financial literacy tends to be more rational in making economic decisions both in their behavior as consumers, investors, and savers, essential things that can encourage sustainable economic growth (Altman, 2012). To realize, many countries have made various efforts to address the lack of financial literacy of their citizens through various formal and non-formal education programs (Orton, 2007).

In Indonesia, the National Strategy for Financial Literacy was launched for the first time in 2013. Apart from aiming to internalize financial literacy, the strategy is also directed at increasing public financial inclusion, increasing the number of people to access financial products and services. From the evaluation of the implementation of the strategy in 2016, it turned out that the achievement of goals and targets was not as expected. Therefore, in 2017 a review was carried out related to the vision, objectives, and several strategic priorities. The review covers Islamic financial literacy, financial inclusion, digital financial services, and financial planning and emphasizes strategically essential targets, namely students in formal education and youth who are no longer in school. Through synergies between several ministries, especially the ministry of finance and implementing the Financial Services Authority (OJK), education and culture, financial institutions, educators, learning materials, strategies, and evaluations have been developed. Financial literacy books for high school students were published in 2014, and material on financial literacy was included in economics learning in schools in 2016. Likewise, financial literacy books were developed in a simple format to improve financial literacy. Students at the basic education level (Elementary School and Junior High School) has been carried out throughout 2014 and 2015 (OJK, 2017. Indonesian Financial Literacy National Strategy: Revisit 2017).

As a national movement, the Indonesian Financial Literacy National Strategy has been appropriately prepared and planned. This is due to the implementation is not adequately organized, the achievement of its objectives has not been as expected. In 2019 the results of a survey conducted by the OJK, the financial literacy of the Indonesian people is still insufficient at 38 percent, and the financial inclusion index at 76.19 percent. Meanwhile, for teenagers who fall into the generation Z category, evidence about the low financial literacy of teenagers in Indonesia can be seen from the report of the Organization for Economic Co-operation and Development (OECD) on "Pisa 2018 Results (Volume IV) Are students smart about money?" The financial literacy score of students in Indonesia is still far below the average score of other students from 20 countries whose financial literacy was tested. The OECD average score is 505, while the score achieved by Indonesian students is only 338. However, Indonesia is at the bottom of the 20 countries surveyed, which can be seen in table 1.

Table 1 informs the performance of financial literacy among students in selected countries. Surprisingly, Indonesia ranked at the lowest score of financial literacy. In detail, 57.4 percent of all students tested scored below level 2, and only 0.3 percent of all students reached level 5. In addition, the relative score of financial literacy was also negative, three (-3) compared to scores in mathematics and reading ability.

One of the crucial factors to increase achievement in implementing the National Strategy for Financial Literacy is developing a financial literacy learning program that is contextual, attracts students' attention, and is based on Information Technology. Almost all students in their teens use information technology in their daily lives. Financial literacy is defined as knowledge and understanding of financial concepts and risks and the skills, motivation, and confidence to apply that knowledge and understanding to make effective decisions in various financial contexts. Furthermore, it is beneficial for improving individuals' and society's financial well-being and enabling participation in economic life.

The content of appropriate educational materials includes (1) money and transactions, (2) planning and managing finances, (3) risk and reward, and (4) financial landscape. Meanwhile, the process can be carried out by: (1) identifying financial information, (2) analyzing information in a financial context, (3) evaluating financial issues, and (4) applying financial knowledge and understanding. The contexts for implementation cover (1) educational and work environments, (2) home and family, (3) individuals, and (4) communities (OECD: Pisa 2018 Results (Volume IV) Are students smart about money?).

Table 1. Snapshot of Performance in Financial Literacy

	Mean score in PISA 2018	"Share of low achievers (below Level 2)"	"Share of top performers (Level 5)"	Relative score[1] after accounting for performance in mathematics and reading
	Mean score	%	%	Mean score
OECD average	505	14.7	10.5	2
Estonia	547	5.3	19.0	16
Finland	537	9.9	19.9	14
Canadian provinces	532	8.8	16.7	4
Poland	520	9.5	11.8	-3
Australia	511	15.6	14.1	4
United States	506	16.0	12.4	5
Portugal	505	14.0	8.3	1
Latvia	501	10.6	6.1	1
Lithuania	498	14.2	7.7	7
Russia	495	14.4	6.3	-1
Spain	492	15.0	5.7	m
Slovak Republic	481	21.2	7.2	-9
Italy	476	20.9	4.5	-17
Chile	451	30.2	3.0	5
Serbia	444	33.2	2.5	-15
Bulgaria	432	38.5	2.4	-10
Brazil	420	43.6	1.9	12
Peru	411	46.4	1.4	-3
Georgia	403	49.8	0.7	-3
Indonesia	388	57.4	0.3	-3

Source : OECD, Pisa 2018 Database, Tables IV. B1.2.1, IV. B1.2.4 and IV. B1.2.8.

An Overview of the Developed Learning Program

Learning Financial Literacy from Our Home (LF2OH) was developed to provide opportunities for students by taking advantage of the learning context at school, home, and family, as well as individually. By gaining knowledge, skills, and understanding of finance in these three contexts, students are expected to combine their learning experiences to improve their financial literacy. In general, family culture in Indonesia consists of authoritarian, democratic, and permissive parenting, the intensity of openness in communication and interaction is significantly insufficient (Anggadwita et al., 2019; Ramadhana, 2018). This learning program is also intended to foster high school students' intention to open communication with parents and other family members. To present, studies and program development on the issue of family financial disclosure in Indonesia are still lacking.

The learning program developed is based on the philosophy of life-based learning, which, according to Kuswandi et al. (2020), emphasizes the importance of developing capabilities, namely the ability to apply competencies to deal with life's changes and problems. The development of this capability development education model has not coincided with the birth of the Z generation group, namely the generation group born before 2000 to 2010. Therefore, education-oriented to capability development for the Z generation group is a necessity to be carried out. Meanwhile, the economic education curriculum implemented in schools in Indonesia is still competency-based, so that the learning program developed is a step to reform economic education in Indonesia (Mukminin, et al., 2019). Learning packages are packaged in application programs that can be accessed via gadgets in a Learning Management System (LMS). The application program uses the Kotlin programming language, XML, with a Firebase database in the form of Android-based mobile learning that can be accessed via mobile phones. The appearance of the initial parts of the program in question can be presented in Figure 1.
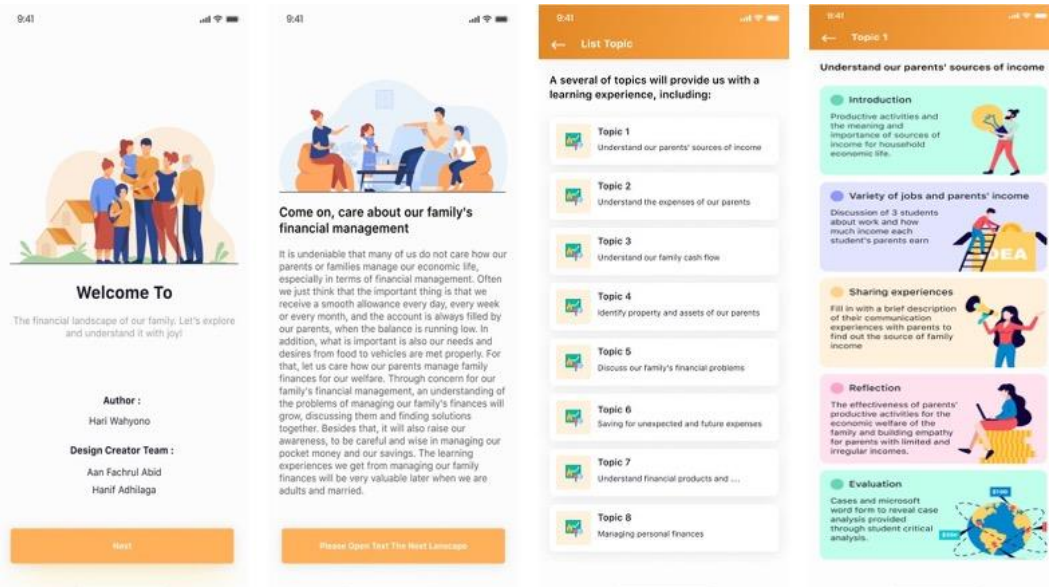
Figure 1. Preface LF2OH platform

Hypotheses

To estimate the learning program's effectiveness, it is necessary to conduct experiments on students who are the target of research. In general, the primary hypothesis in this study can be formulated that students who carry out learning with the LF2OH program have better financial literacy than students who carry out classical learning without involvement in family financial management. Based on the experimental design using Solomon Four Group Design (Braver & Braver, 1988), minor hypotheses can be formulated as follows:

1. The mean gain score of the experimental class students is higher than the control class students in the pre-test and post-test group with a significant level of difference.
2. The post-test mean of the experimental class students is higher than the control class students in the post-test only group with a significant level of difference.
3. the post-test mean of the experimental and control class students in the pre-test and post-test group and the post-test only group were not significantly different.
4. the post-test mean of the experimental class students was higher than the control class students in both the pre-test and post-test group and the post-test only group with a significant level of difference.

METHOD

Research Design

The research was conducted with a deductive approach, and the method for designing the study and collecting data was quantitative. The research implementation was designed in a true experimental manner with the Solomon four-group design. The determination of the research design was based on the research objective, namely to test the effectiveness of the financial literacy learning program through concern for the financial management of high school students' families based on the Learning Management System (LMS). In addition, the determination of the Solomon four-group design was also carried out with these design considerations: (1) minimizing internal and external invalidity; (2) differences between groups associated with experimental treatment can be confirmed; and (3) able to neutralize the pre-test effect that may affect student learning achievement, because financial problems and financial literacy internalization have been taught and carried out in schools. In addition, the opportunity to experiment with a large number of students without being tied to a particular school can be done with the help of the local education bureaucracy.

The study was conducted on 281 students from several high schools in Malang of East Java Province in Indonesia. The selection of students who were used as research subjects was carried out by purposive random sampling, taking into account variations in the value of economic subjects and the socioeconomic status of parents for grouping in each class. Information on the value of economic subjects and the condition of students' socioeconomic status is obtained from the documentation available at the school. Variations on other aspects that are thought to affect class homogeneity are assumed to be the same because the research was conducted in relatively homogeneous schools, namely public high schools and located in one location. The experimental design in this study can be described in Table 2.

Table 2. Solomon Four-Group Design Experimental Design

Class	Pre-test and Post-test Group			Post-test Only	
	Pre-test	treatment	Post-test	Treatment	Post-test
Experiment 1	O_1	X	O_2		
Control 1	O_3	-	O_4	-	
Experiment 2				X	O_5
Control 2		-		-	O_6

The two experimental groups were given treatment, namely the application of the developed learning program, while the two control groups were given online classical learning with the topic of financial literacy. Both the experimental and control groups were given a pre-test and post-test, and some were given a post-test solely.

Research Subject

The subjects in this study were state high school students in Malang of East Java in Indonesia. There are ten SMAN in Malang, and all of them have A (excellent) accreditation status. There are six schools that are referred to as favourite schools because they are in great demand by the public because their graduates are widely accepted in well-known universities in Indonesia, and their alumni are successful in careers in various fields, namely, SMAN 3, SMAN 1, SMAN 5, SMAN 4, SMAN 8 and SMAN 10. The six schools, which are located in one area, are SMAN 1, SMAN 3, and SMAN 4, have students characteristics that are relatively homogeneous in terms of socio-economic status background, level of intelligence, and social environment. In this regard, in this study, the three schools were selected as research sites and selected research subjects.

In each of the schools selected as research sites, a number of students were selected in various ways depending on the number of students in grade 12 majoring in Social Sciences. The selected students were grouped into four different classes, namely experimental class 1, experimental class 2, control class 1, and control class 2 (see table 2). The distribution of samples in each school can be tabulated in table 3.

Table 3. Distribution of Research Samples by School

Class	SMAN 1	SMAN 3	SMAN 4	Total
Experiment 1	26	23	24	73
Control 1	22	22	21	65
Experiment 2	21	25	24	70
Control 2	26	22	25	73
Total	95	92	94	281

The Implementation of Experiment

Experiments were carried out simultaneously in three schools that were used as research sites. This is done to maintain the effectiveness of the experiment so that each class still contains the students that have been selected. The experiment was carried out by three teachers from each school, accompanied by a research team. The duration of learning in both the experimental and control groups was the same, namely for two months. However, in the experimental group, students learn more independently by using the developed application. The topic of financial literacy taught online refers to the framework used by PISA to assess financial literacy, as described at the end of sub-chapter 2.2. Meanwhile, for the experimental class, the learning material in the application has been described in the last paragraph of the introduction. At the end of the learning activity or experiment, all research subjects were given a financial literacy test that had been tested for validity and reliability and a questionnaire to obtain information about students' conditions and learning experiences.

Data Analysis

In accordance with the experimental design, data analysis was carried out to determine the difference in learning achievement between the control and experimental classes. For the pre-test and post-test group class, the difference analysis was carried out on the gain score, namely the difference between the post-test and pre-test. Meanwhile, for the post-test-only group class, the difference analysis was carried out on the post-test results. To find out whether there was a pre-test effect, an analysis of the post-test differences was carried out in the pre-test and post-test group and the post-test only group. Furthermore, to determine the effectiveness of the use of learning media in the two groups, an analysis of post-test differences was carried out in the experimental and control groups. The analysis was carried out with the IBM SPSS Statistics application program version 24.0. for Windows. Overall, based on the experimental design, the analysis process can be tabulated in Table 4.

Table 4: Data Analysis

Analysis	
1. Effectiveness in the Pre-test and Post-test group (Hypothesis 1)	$Q_2 - Q_1$ vs $Q_4 - Q_3$
2. Effectiveness in the Post-test group only (Hypothesis 2)	Q_5 vs Q_6
3. Pre-test effect on experimental and control classes (Hypothesis 3)	Q_2 vs Q_5 and Q_4 vs Q_6
4. Overall effectiveness in the experimental and control classes (Hypothesis 4)	Q_2 and Q_5 vs Q_4 and Q_6

RESULTS AND DISCUSSION
Hypothesis Testing

The experimental results to test the effectiveness of the learning program LF2OH in accordance with the formulated hypothesis can be described as follows. In the pre-test and post-test group, the average gain score for the experimental class was 10.3836, which was higher than the control class average of 7.2462, and statistically, the difference was significant with a t-value of 4.696 with a significance of 0.000. Levene's test to estimate class homogeneity also proved that there was no difference in variance between the experimental class and the control class, with an F-value of 0.196 and a significance of 0.724. The overall results of the analysis can be seen in table 5.

Table 5. Descriptive Statistics Mean Gain Score Experiment Class and Control Class Pre-test and Post-test Group

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
GAIN SCORE	Experiment Class	73	10.3836	4.31609	.50516
	Control Class	65	7.2462	3.41427	.42349

Table 6. Test Results Significance of Differences in the Gain Score of Experimental Class and Control Class Pre-test and Post-test Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
GAIN SCORE	Equal variances assumed	.196	.724	4.696	136	.000	3.13741	.66811
	Equal variances not assumed			4.760	134.197	.000	3.13741	.65919

In the post-test group only, the post-test mean of the experimental class was 82.9333, which was higher than the control class average of 72.5000, and statistically, the difference was significant with a t-value of 7.450 with a significance of 0.000. Levene's test to test class homogeneity also proved that there was no difference in variance between the experimental class and the control class, with an F-value of 0.004 and a significance of 0.951. The overall results of the analysis can be seen in table 7.

Table 7. Descriptive Statistics of Mean Gain Score of Experimental Class and Control Class of Post-test only Group

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
POST-TEST	Experiment Class	75	82.9333	8.23035	.95036
	Control Class	68	72.5000	8.50724	1.03165

Table 8. Test Results Significance of Differences in the Gain Score of the Experimental Class and the Control Class of the Post-test only Group

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
POST-TEST	Equal variances assumed	.004	.951	7.450	141	.000	10.43333	1.40039
	Equal variances not assumed			7.438	138.596	.000	10.43333	1.40267

The absence of a pre-test effect in both the experimental class and the control class is evidenced by the insignificant difference in the post-test mean of the experimental class in the pre-test and post-test group of 81.6438, and the post-test only group of 82.7571. Statistically, the post-test mean was not significantly different, with a t-value of 0.778 with a significance of 0.438. The homogeneity of the two experimental classes is also evident from the absence of differences in variance, with Levene's F-test value of 0.19 and a significance of 0.891. The results of the analysis can be seen in table 9.

Table 9. Descriptive Statistics Post-test Means Experimental Class Pre-test Group and Post-test and Experiment Class Post-test Group Only

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
POST-TEST	Experiment Class (Pretest – Posttest)	73	81.6438	8.78978	1.02877
	Experiment Class (Posttest Only)	70	82.7571	8.29429	.99136

Table 10. Test Results Significance of Differences in Post-test Mean Experiment Class Pre-test and Post-test Group and Experiment Class Post-test only Group

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
POSTTEST	Equal variances assumed	.019	.891	.778	141	.438	-1.11331	1.43044
	Equal variances not assumed			.779	140.965	.437	-1.11331	1.42869

For the control class in the Pre-test and Post-test group the average post-test was 73.1538, while in the Post-test Only group it was 73.3836. Statistically, the post-test mean was not significantly different with a t-value of 0.778 with a significance of 0.438. The homogeneity of the two experimental classes is also evident from the absence of differences in variance, with the Levene F-test value of 0.19 and a significance of 0.891. The results of the analysis can be seen in table 11.

Table 11. Descriptive Statistics Post-test Mean Control Class Pre-test Group and Post-test and Control Class Post-test Only

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Experiment Class	65	73.1538	8.46358	1.04978
	Control Class	73	73.3836	9.01947	1.05565

Table 12. Test Results Significance of Differences in Post-test Mean Control Class Group Pre-test and Post-test and Control Class Group Post-test Only

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
POSTTEST	Equal variances assumed	.149	.700	.192	136	.762	4.77028	1.49430
	Equal variances not assumed			.204	135.614	.682	4.77028	1.48877

Overall, the average post-test of the experimental class in both the pre-test, post-test, and post-test only groups was 82.1888, different from the control class at 75,6304. The significance of the difference in the mean is evident from the t-test of 6.250 with a significance of 0.000. both classes were also proven to be homogeneous with Levene's test with an F-value of 0.182 with a significance of 0.670. The results of the analysis can be seen in table 13.

Table 13. Descriptive Statistics Mean Post-test Experiment Class and Control Class Pretest Group, Posttest and Post-test Only Group

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
POST-TEST	Experiment Class	143	82.1888	8.53902	.71407
	Control Class	138	75.6304	9.05142	.77051

Table 14. Test Results Significance of Differences in Post-test Means of Experiment Class and Control Class of Pre-test –

Post-test Group and Post-test Only Group

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
POST-TEST	Equal variances assumed	.182	.670	6.250	279	.000	6.55838	1.04942
	Equal variances not assumed			6.243	276 .564	.000	6.55838	1.05051

Other Findings

In addition to testing the hypothesis, this study also analyzed the difference in the average learning achievement (post-test) of students who received treatment for the LF2OH learning program (Experimental Class), between those whose mothers worked and whose mothers acted as housewives (not working). The results of the analysis prove that the post-test mean of students whose mothers work is higher, which is 83.8571 compared to students whose mothers do not work (79.4219). Statistically, the difference is significant with a t-value of 4.014 and a significance of 0.000. both groups also proved homogeneity with a Levene test value of 1.527 and a significance of 0.219. The results of the overall analysis can be presented in Table 15.

Table 15. Descriptive Statistics of Post-test Means of Students Who Received Treatment in the LF2OH Learning Program

(Experimental Class) whose mothers are working and whose mothers are not working

	MWS	N	Mean	Std. Deviation	Std. Error Mean
POST-TEST	Working Mom	84	83.8571	7.16777	.78207
EXPERIMENTCLASS	Mom Does Not Work	64	79.4219	5.92494	.74062

Table 16. The Results of the Significance Test of the Post-test Mean Students who received Treatment for the LF2OH

Learning Program (Experimental Class) whose mothers worked and whose mothers did not work

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
POSTTEST EXPERIMENTCLASS	Equal variances assumed	1.527	.219	4.014	146	.000	4.43527	1.10503
	Equal variances not assumed			4.118	144.992	.000	4.43527	1.07710

This study also conducted differences in the post-test mean of students who received treatment for the LF2OH learning program (Experimental Class) based on the socioeconomic status of their parents. In the group of students with insufficient socioeconomic status, the average post-test was 78,8600, those with medium status were 80.7727, and those with high status had an average of 85,7407, respectively. Simultaneously the post-test mean the difference is significant with an F-value of 16.216 and a significance of 0.000. However, in the post hoc analysis (multiple comparisons) with both the Tukey HSD and Scheffe formulas, it turns out that the difference is only significant between students with parents with high socioeconomic status and those with middle and inadequate status with a significance of 0.001 and 0.000. Meanwhile, the post-test mean for students with middle and low socioeconomic status is not significant because the significance is 0.316 (for the Tukey HSD formula) and 0.350 (for the Scheffe formula). The results of the overall analysis can be presented in table 17.

Table 17. Descriptive Statistics of the Post-test Mean of Students Who Received LF2OH Learning Program Treatment (Experimental Class) based on the Socio-Economic Status of Parents

	SES	N	Subset 1	Subset 2
Tukey HSD[a,b,c]	LOW SES	50	78.8600	
	MIDDLE SES	44	80.7727	
	HIGH SES	54		85.7407
	Sig.		.300	1.000
Scheffe[a,b,c]	LOW SES	50	78.8600	
	MIDDLE SES	44	80.7727	
	HIGH SES	54		85.7407
	Sig.		.334	1.000

Means for groups in homogeneous subsets are displayed.

Table 18. The Results of the Simultaneous Significance Test for the Post-test Means of Students who Received LF2OH Learning Program Treatment (Experimental Class) were based on the Socio-Economic Status of Parents

Dependent Variable: POSTTEST_EXPERIMENT_CLASS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1314.335[a]	2	657.168	16.216	.000
Intercept	983057.571	1	983057.571	24258.083	.000
SES	1314.335	2	657.168	16.216	.000
Error	5876.118	145	40.525		
Total	1000867.000	148			
Corrected Total	7190.453	147			

a. R Squared = .183 (Adjusted R Squared = .172)

Table 19. The Results of the Post-Hoc Significance Test (Multiple Comparation) The Post-test Mean of Students Who Received LF2OH Learning Program Treatment (Experimental Class) was based on the Socio-Economic Status of Parents

Dependent Variable: POSTTEST_EXPERIMENT_CLASS

	(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Tukey HSD	HIGH SES	MIDLE SES	4.9680*	1.29286	.001	1.9065	8.0295
		LOW SES	6.8807*	1.24938	.000	3.9222	9.8393
	MIDLE SES	HIGH SES	-4.9680*	1.29286	.001	-8.0295	-1.9065
		LOW SES	1.9127	1.31587	.316	-1.2033	5.0287
	LOW SES	HIGH SES	-6.8807*	1.24938	.000	-9.8393	-3.9222
		MIDLE SES	-1.9127	1.31587	.316	-5.0287	1.2033
Scheffe	HIGH SES	MIDLE SES	4.9680*	1.29286	.001	1.7704	8.1656
		LOW SES	6.8807*	1.24938	.000	3.7907	9.9708
	MIDLE SES	HIGH SES	-4.9680*	1.29286	.001	-8.1656	-1.7704
		LOW SES	1.9127	1.31587	.350	-1.3418	5.1672
	LOW SES	HIGH SES	-6.8807*	1.24938	.000	-9.9708	-3.7907
		MIDLE SES	-1.9127	1.31587	.350	-5.1672	1.3418

Based on observed means.

DISCUSSION

From the four hypotheses tested in this study, three of them prove that there is a significant difference in financial literacy learning outcomes between high school students who receive the LF2OH learning program and students who are taught classically and do not use the family environment as a place and source of learning. This basically also proves that the LF2OH learning program is more effective in learning financial literacy compared to the classical learning model without utilizing the family environment as a place and source of learning. This is in line with the educational philosophy developed by an Indonesian education figure named Ki Hajar Dewantara regarding the three education pillars, which reveals the importance of the synergy of three educational environments, namely school, family, and community. Education will run optimally when the learning process at school is supported by the learning process in the family and community (Al Masjid & Setyawan, 2019; Kamdi, 2021).

In a family environment, through the LFOH learning program, students gain real learning experiences about financial management for their families and for themselves. This is what gives more value compared to students who only study theoretically and classically about financial literacy. This is in line with the thoughts of Glukhov (2013), who reveal the importance of openness and discussion among family members in financial management. The aforementioned study by LeBaron et al. (2018) revealed the importance of involving children in managing family finances.

It is undeniable that a family is a crucial place and source of learning to improve the financial literacy of students or children. Within the family, they can gain factual experience on financial management issues, recognize the inflow and outflow of income, manage income to be allocated to various needs and wants. They also have the opportunity to exchange experiences and knowledge about various financial services. Furthermore, LeBaron et al. (2020) suggested the need to teach children and families about finances, especially for millennial children whose lifestyles are different from parents who were generally born as baby boomers. In principle, students or children learn more about financial management from parents and families than from school. Therefore, the strategy and the way parents teach financial knowledge, attitudes, and behavior will greatly determine the child's ability throughout his life to manage finances and the ability to have financial literacy.

In addition to proving the effectiveness of the LF2OH learning program, this study also obtained additional findings that students gained learning experiences through the program. The findings indicate that students also have differences in learning achievement, which are distinguished according to their mother's status, working or as housewives who do not work. It is evident that students whose mothers work have higher learning outcomes compared to students whose mothers do not work. It can be assumed that working mothers have better financial management experience than mothers who do not work, and this experience is internalized to their children. In addition, working mothers have learning experiences in financial management through interactions with co-workers, as well as to be able to work in general, they must also have adequate education. This is certainly not owned by mothers who do not work. This is in accordance with the report on community service activities to improve the financial management of housewives carried out by Soegoto et al. (2020), which revealed that housewives who did not work had many problems in managing their family's finances.

The second additional finding in this study is that there are differences in student financial literacy learning outcomes based on the socioeconomic status of their parents. It is proven that the higher the socioeconomic status of parents, the higher the achievement of learning financial literacy. However, the difference in learning achievement was not significant between students whose parents had middle and low socioeconomic status. It is conceivable that students with parents with high socioeconomic status tend to have better and varied financial management experiences compared to students from families with middle and low socioeconomic status. Students with high socioeconomic status will have more pocket money, have the opportunity to make more and varied transactions, have bank accounts, and even have their own credit cards. Meanwhile, this is not the case for students with parents with middle and low socioeconomic status. This finding is in line with the results of research by Ali et al. (2016); Romadoni (2017); Setyawati and Suroso (2017), which revealed the influence of socioeconomic status on financial management education and financial literacy.

Practical and Theoretical Implications

This research proves that the development of learning programs based on information technology through smartphones can be accessed anytime and anywhere. This learning model is more effective than classical learning even though during the current Covid-19 pandemic, both of them also use information technology because classical learning is done online with the internet network. Individually accessible learning programs give students personal independence to take the initiative to study independently. In addition, by utilizing the family environment as a place and source of learning, the philosophy of the three educational centers, namely schools, families, and communities, which has been initiated by educational figures for a long time, has found the right momentum. In the future, in the era of the age of knowledge and big data, the learning process will become more personal, and learning resources will be available in abundance outside the walls of schools that have been imprisoning students. Practically, the findings of this study provide an alternative step to overcome the low level of financial literacy in the competition of Indonesian students with students from other countries, whose achievement in financial literacy is better in the PISA test. The financial literacy improvement program launched by the Government of Indonesia, both through the Ministry of Education and Culture and the Ministry of Finance, is expected to be effective in assisting its effectiveness through the LF2OH financial literacy learning program, which is proven to be able to improve students' financial literacy in this study.

CONCLUSION

The financial literacy learning program through the family environment that is packaged in the form of the Financial Literacy Learning from Our Home (LF2OH) application has proven to be effective in increasing the financial literacy of high school students compared to classical learning without utilizing the family environment as a place and source of learning. Students who receive learning with the LF2OH program and have working mothers tend to have higher financial literacy learning outcomes than those whose mothers do not work. Furthermore, students with parents with high socioeconomic status and receiving the LF2OH learning program were able to achieve higher financial literacy learning outcomes compared to students whose parents had middle and low socioeconomic status.

REFERENCES

Al Masjid, A., & Setyawan, A. D. (2019). The Application of the Ki Hadjar Dewantara Trilogy Principles in Building the Students Independence at Salam (Sanggar Anak Alam). In *Proceedings: The International Conference on Technology, Education, and Science, 1*(1),109—113

Altman, M. (2012). Implications of Behavioural Economics for Financial Literacy and Public Policy. *The Journal of Socio-Economics*, *41*(5), 677—690.

Anggadwita, G., Profityo, W. B., Alamanda, D. T., & Permatasari, A. (2019). Cultural Values and Their Implications to Family Business Succession: A Case Study of Small Chinese-Owned Family Businesses in Bandung, Indonesia. *Journal of Family Business Management*.

Assen, J. H. E., Meijers, F., Zwaal, W., & Poell, R. F. (2020). Collective Learning, Teacher Beliefs and Teaching Behaviour in Management and Social-Educational University Programmes. *Journal of Vocational Education & Training*, *72*(1), 1—22

Bialowolski, P., Cwynar, A., & Weziak-Bialowolska, D. (2020). Financial Management, Division of Financial Management Power and Financial Literacy in The Family Context–Evidence from Relationship Partner Dyads. *International Journal of Bank Marketing*.

Bowen, C. F., Lago, D. J., & Furry, M. M. (1997). Money management in families: A Review of The Literature with A Racial, Ethnic, and Limited Income Perspective. *Advancing the consumer interest*, 32—42.

Braver, M. W., & Braver, S. L. (1988). Statistical Treatment of the Solomon Four-Group Design: A Meta-Analytic approach. *Psychological bulletin*, *104*(1), 150.

Glukhov, V. (2013). Organization of Financial Management in A Household. *Middle East Journal of Scientific Research*, *17*(1), 01-05.

Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household Financial Management: The Connection between Knowledge and behavior. *Fed. Res. Bull.*, *89*, 309.

Jackson, N. (2011). Learning for A Complex World: A Lifewide Concept of Learning, Personal Development and Education. *Guildford, UK: Surrey Centre for Excellence in Professional Training and Education, University of Surrey*.

Jang, K., Hahn, J., & Park, H. J. (2014). Comparison of Financial Literacy between Korean and US High School Students. *International Review of Economics Education*, *16*, 22—38.

Kamdi, W. (2021). Reflections on One Year of Distance Learning - Learning from Home. Webinars and National Workshop on APKS and SLCC PGRI Kediri, 29 March 2021.

Kastur, A., & Riyanto, Y. (2020). Feasibility of Developing Direct Learning Models with a Life Based Learning Approach. *IJORER: International Journal of Recent Educational Research*, *1*(3), 261—270.

Kocoglu, E., & Tekdal, D. (2020). Analysis of Distance Education Activities Conducted during COVID-19 Pandemic. *Educational Research and Reviews*, *15*(9), 536—543.

Kuswandi, D., Setyosari, P., Hutkemri, H., Suryati, N., Chusniyah, T., Diana, R. C., & Nurdiansa, E. S. (2020, October). Development of Life-Based Curriculum Model Designs in The Global Era. In *Proceeding on International Conference of Science Management Art Research Technology, 1*(1), 26-32.

Lazarides, R., Fauth, B., Gaspard, H., & Göllner, R. (2021). Teacher Self-Efficacy and Enthusiasm: Relations to Changes in student-perceived teaching quality at the beginning of secondary education. *Learning and Instruction*, *73*, 101435.

LeBaron, A. B., Marks, L. D., Rosa, C. M., & Hill, E. J. (2020). Can We Talk About Money? Financial Socialization Through Parent–Child Financial Discussion. *Emerging Adulthood*, *8*(6), 453—463.

Lebaron, A. B., Rosa-Holyoak, C. M., Bryce, L. A., Hill, E. J., & Marks, L. D. (2018). Teaching Children about Money: Prospective Parenting Ideas from Undergraduate Students. *Journal of Financial Counseling and Planning*, *29*(2), 259—271.

Mukminin, A., Habibi, A., Prasojo, L. D., Idi, A., & Hamidah, A. (2019). Curriculum Reform in Indonesia: Moving from an Exclusive to Inclusive Curriculum. *CEPS Journal*, *9*(2), 53—72.

Nurhayati, L., & Muflikhati, I. (2020). Child Involvement in Family Financial Management and Subjective Well-Being of Children from the Intact and Non-Intact Families. *Journal of Consumer Sciences*, *5*(1), 46—57.

Putri, A. N., & Suparmi, S. (2020). Efektivitas Pembelajaran Daring Program Studi Pendidikan Ekonomi. *Jurnal Ecogen*, *3*(4), 627—634.

Ramadhana, M. R. (2018). Keterbukaan Diri dalam Komunikasi Orangtua Anak pada Remaja Pola Asuh Orangtua Authoritarian. *Channel Jurnal Komunikasi*, *6*(2), 197—204.

Romadoni, R. (2017). Pengaruh Status Sosial Ekonomi dan Pendidikan Pengelolaan Keuangan di Keluarga terhadap Literasi Keuangan Siswa SMK Negeri 1 Surabaya. *Jurnal Ekonomi Pendidikan dan Kewirausahaan*, *3*(1), 22—34.

Safira, N., & Rahadi, R. A. (2020). A Conceptual Study on Categorising the Money Management Behavior: Study of Millennial in Bandung and Jabodetabek Indonesia. *Asian Journal of Research in Business and Management*, *2*(4), 99—109.

Setyawati, I., & Suroso, S. (2017). Does The Sharia Personal Financial Management Require? Study of Sharia Financial Literacy among Lecturers. *International Journal of Economics and Financial Issues*, *7*(4).

Siron, Y., Wibowo, A., & Narmaditya, B. S. (2020). Factors Affecting the Adoption of E-Learning in Indonesia: Lesson from Covid-19. *JOTSE: Journal of Technology and Science Education*, *10*(2), 282—295.

Soegoto, A. S., Lintong, D. N., Mintalangi, S. S., & Soeikromo, D. (2020). Meningkatkan Peran Ibu Rumah Tangga Dalam Pengelolaan Keuangan. *JPPM (Jurnal Pengabdian dan Pemberdayaan Masyarakat)*, *4*(1), 141—148.

Sudianto, S., Dwijanto, D., & Dewi, N. R. (2019). Students' Creative Thinking Abilities and Self-Regulated Learning on Project-Based Learning with LMS Moodle. *Unnes Journal of Mathematics Education Research*, *8*(1), 10—17.

Warsito, M. B., Haryono, H., & Wibawanto, H. (2019). E-Learning Development based on Schoology for Subject of Information and Communication Technology Grade VII using Flipped-Learning Approach. *Innovative Journal of Curriculum and Educational Technology*, *8*(1), 1—10.